CPC COOPERATIVE PATENT CLASSIFICATION

E05F DEVICES FOR MOVING WINGS INTO OPEN OR CLOSED POSITION; CHECKS FOR WINGS; WING FITTINGS NOT OTHERWISE PROVIDED FOR, CONCERNED WITH THE FUNCTIONING OF THE WING

NOTE

In this subclass, the following terms are used with the meanings indicated:

- "closer" or "opener" includes devices for assisting wing-movement or for wing-counterbalancing.

E05F 1/00 Closers or openers for wings, not otherwise provided for in this subclass

E05F 1/002 . {controlled by automatically acting means (for powered-operated mechanisms E05F 15/20)}
E05F 1/004 . . {by thermostats, rain, wind or noise (E05F 1/006 takes precedence)}
E05F 1/006 . . {by emergency conditions, e.g. fire (operating or controlling mechanisms for physical fire-barriers A62C 2/24)}
E05F 1/008 . . {by time control}

E05F 1/02 . gravity-actuated, {e.g. by use of counterweights}
E05F 1/025 . . {with rectilinearly-moving counterweights}
E05F 1/04 . . for wings which lift during movement, {operated by their own weight}
E05F 1/043 . . . {with cams, helical tracks (E05F 1/061 takes precedence)}
E05F 1/046 . . . { with rectilinearly-inclined tracks for sliding wings}
E05F 1/06 . . . Mechanisms in the shape of hinges or pivots, operated by the weight of the wing
E05F 1/061 . . . . {with cams or helical tracks}
E05F 1/063 . . . . . {with complementary, substantially identical and slidingly cooperating cam surfaces (E05F 1/066 takes precedence)}
E05F 1/065 . . . . . {Cam-and-wheel arrangements}
E05F 1/066 . . . . . {Helical grooves, slots, threads or the like}
E05F 1/068 . . . . {with inclined pivot-axes}

E05F 1/08 . spring-actuated, {e.g. for horizontally sliding wings (counterbalancing sliding or lifting wings E05D; springs per se F16F, e.g. gas-springs F16F 9/00)}
E05F 1/10 . . for swinging wings, {e.g. counterbalance (spring-assisted actuation of lids or covers of refuse receptacles B65F 1/1623)}
E05F 1/1008 . . . {with a coil spring parallel with the pivot axis (E05F 1/1207 takes precedence)}
E05F 1/1016 . . . . {with a canted-coil torsion spring}
E05F 1/1025 . . . . { with a compression or traction spring}
E05F 1/1033 . . . {with a torsion bar (E05F 1/123 takes precedence)}

E05F 1/1041 . . . {with a coil spring perpendicular to the pivot axis (E05F 1/1246 takes precedence)}
E05F 1/105 . . . . {with a compression spring}
E05F 1/1058 . . . . . {for counterbalancing}
E05F 1/1066 . . . . {with a traction spring}
E05F 1/1075 . . . . . {for counterbalancing}
E05F 1/1083 . . . {with a leaf or similar spring (E05F 1/1284 takes precedence)}
E05F 1/1091 . . . {with a gas spring (E05F 1/1292 takes precedence)}
E05F 1/12 . . . Mechanisms in the shape of hinges or pivots, operated by springs { for hinges with two or more pins E05D 3/06}
E05F 1/1207 . . . . {with a coil spring parallel with the pivot axis}
E05F 1/1215 . . . . . {with a canted-coil torsion spring}
E05F 1/1223 . . . . . {with a compression or traction spring}
E05F 1/123 . . . . {with a torsion bar}
E05F 1/1238 . . . . . {specially adapted for vehicles}
E05F 1/1246 . . . . {with a coil spring perpendicular to the pivot axis}
E05F 1/1253 . . . . . {with a compression spring}
E05F 1/1261 . . . . . {for counterbalancing}
E05F 1/1269 . . . . . {with a traction spring}
E05F 1/1276 . . . . . {for counterbalancing}
E05F 1/1284 . . . . {with a leaf or similar spring}
E05F 1/1292 . . . . {with a gas spring}
E05F 1/14 . . . with double-acting springs, e.g. for closing and opening or checking and closing {no material}
E05F 1/16 . . for sliding wings

E05F 3/00 **Closers or openers with braking devices, e.g. checks; Construction of pneumatic or liquid braking devices** (construction of non-pneumatic or non-liquid braking devices E05F 5/00; friction devices in hinges E05D 11/08)

E05F 3/02 . with pneumatic piston brakes (rotary type E05F 3/14)

E05F 3/04 . with liquid piston brakes (rotary type E05F 3/14)
E05F 3/06 . . in which a torsion spring rotates a member around an axis perpendicular to the axis of the piston
E05F 3/08 . . in which a torsion spring rotates a member around an axis arranged in the direction of the axis of the piston
E05F 3/10 . . with a spring, other than a torsion spring, and a piston, the axes of which are the same or lie in the same direction
E05F 3/102 . . . {with rack-and-pinion transmission between driving shaft and piston within the closer housing}
E05F 3/104 . . . {with cam-and-slide transmission between driving shaft and piston within the closer housing}
E05F 3/106 . . . {with crank-arm transmission between driving shaft and piston within the closer housing}
E05F 3/108 . . . {with piston rod protruding from the closer housing; Telescoping closers}

E05F 3/12 . . Special devices controlling the circulation of the liquid, e.g. valve arrangement ({E05F 3/223 takes precedence}; valves per se F16K)

E05F 3/14 . with fluid brakes of the rotary type

E05F 3/16 . with friction brakes

E05F 3/18 . with counteracting springs (double-acting springs E05F 1/14)

E05F 3/20 . in hinges

E05F 3/22 . Additional arrangements for closers, e.g. for holding the wing in opened or other position

E05F 3/221 . . {Mechanical power-locks, e.g. for holding the wing open or for free-moving zones}

E05F 3/222 . . . { electrically operated (E05F 3/223 takes precedence)}

E05F 3/223 . . { Hydraulic power-locks, e.g. with electrically operated hydraulic valves}

E05F 3/224 . . {for assisting in opening the wing}

E05F 3/225 . . { mounted at the bottom of wings, e.g. details related to seals, covers, connections to the wings, embedding in the floor}

E05F 3/226 . . . { with means to adjust the closed position of the wing}

E05F 3/227 . . { mounted at the top of wings, e.g. details related to closer housings, covers, end caps or rails therefor}

E05F 5/00 **Braking devices, e.g. checks; Stops; Buffers;** {Dovetails with buffering action}**;** (construction of pneumatic or liquid braking devices E05F 3/00; combined with devices for holding wings open E05C 17/00; devices for limiting opening of wings or for holding wings open by a movable member extending between frame and wing E05C 17/04)

E05F 5/003 . {for sliding wings (E05D 13/04 takes precedence)}

E05F 5/006 . { for hinges having a cup-shaped fixing part, e.g. for attachment to cabinets or furniture}

E05F 5/02 . specially for preventing the slamming of {swinging} wings {during final closing movement, e.g. jamb stops}

E05F 5/022 . . {specially adapted for vehicles, e.g. for hoods or trunks}

E05F 5/025 . . . {specially adapted for vehicle doors}

E05F 5/027 . . {with closing action}

E05F 5/04 . . hand-operated, {e.g. removable}; operated by centrifugal action {or by high closing speed}

E05F 5/06 . Buffers {or stops limiting opening of swinging wings, e.g. floor or wall stops}(E05F 5/02 takes precedence)

E05F 5/08 . . with springs

E05F 5/10 . . with piston brakes

E05F 5/12 . specially for preventing the closing of a wing before another wing has been closed

E05F 7/00 **Miscellaneous accessories for wings** (specially adapted for furniture A47B 95/00; door-lifters B66F, E04F 21/00; knobs or handles E05B)

E05F 7/005 . {Aligning devices for wings}

E05F 7/02 . for raising wings before being turned {before sliding E05D 15/565}

E05F 7/04 . Arrangements affording protection against rattling (with buffering action E05F 5/00)

E05F 7/06 . Devices for taking the weight of the wing, arranged away from the hinge axis

E05F 7/08 . Special means for transmitting movements between vertical and horizontal sliding bars, rods, or cables {(E05D 15/5208 takes precedence)}

Operating mechanisms for wings (for safeguarding bank teller windows E05G 5/00; for interconnected louvres E06B 7/086; for blinds or roll-type closures E06B 9/00)

E05F 9/00 **Means for operating wings by hand rods not guided in or on the frame, including those which also operate the fastening** (bolts or fastening devices for wings E05C)

E05F 11/00 **Man-operated mechanisms for operating wings, including those which also operate the fastening** (connecting mechanisms for a plurality of wings E05F 17/00)

E05F 11/02 . for wings in general, e.g. fanlights (E05F 11/36 takes precedence; for windows to be lowered vertically E05F 11/38; for doors E05F 11/54)

E05F 11/04 . . with cords, chains or cables

E05F 11/06 . . . in guide-channels

E05F 11/08 . . with longitudinally-moving bars guided, e.g. by pivoted links, in or on the frame

E05F 11/10 . . . Mechanisms by which a handle moves the bar

E05F 11/12 . . . Mechanisms by which the bar shifts the wing

E05F 11/14 . . . . directly, i.e. without links, shifting the wing, e.g. by rack and gear or pin and slot

E05F 11/145 . . . . . {by pin and slot}

E05F 11/16 . . . . shifting the wing by pivotally-connected members {(moving) in a plane perpendicular to the pivot axis of the wing}

E05F 11/18 . . . . . consisting of a lever, e.g. an angle lever, only {no material}

E05F 11/20 . . . . . consisting of a lever, e.g. an angle lever, and only one additional link {no material}

E05F 11/22 . . . . . consisting of a lever, e.g. an angle lever, and tow or more additional links in series {no material}

E05F 11/24 . . . . shifing the wing by pivotally-connected members {(moving) in a plane parallel to the pivot axis of the wing}

E05F 11/26 . . . . . consisting of a lever, e.g. an angle lever, only {no material}

E05F 11/28 . . . . . consisting of a lever, e.g. an angle lever, and one or more additional links {no material}

E05F 11/30 . . . . . consisting of links in rhomb-form {no material}

E05F 11/32 . . with rotary bars guided in the frame (E05F 11/34 takes precedence)

E05F 11/34 . . with screw mechanisms

E05F 11/36 . specially designed for passing through a wall

E05F 11/38 . for sliding windows, e.g. vehicle windows, to be opened or closed by vertical movement

E05F 11/382 . . {for vehicle windows (E05F 11/40 to E05F 11/52 take precedence)}

E05F 11/385 . . . {Fixing of window glass to the carrier of the operating mechanism}

E05F 11/40 . . operated by screw mechanism

E05F 11/405 . . . {for vehicle windows}

E05F 11/42 . . operated by rack bars and toothed wheels {or other push-pull mechanisms}

E05F 11/423 . . . {for vehicle windows}

E05F 11/426 . . . . {Flexible rack-and-pinion arrangements}

E05F 11/44 . . operated by one or more lifting arms

E05F 11/445 . . . {for vehicle windows}

E05F 11/46 . . operated by lazy-tong mechanism

E05F 11/465 . . . {for vehicle windows}

E05F 11/48 . . operated by cords or chains {or other flexible elongated pulling elements, e.g. tapes}

E05F 11/481 . . . {for vehicle windows}

E05F 11/483 . . . . {by cables}

E05F 11/485 . . . . . {with cable tensioners}

E05F 11/486 . . . . . {with one cable connection to the window glass}

E05F 11/488 . . . . . {with two cable connections to the window glass}

E05F 11/50 . . Crank gear with clutches or retaining brakes, for operating window mechanisms

E05F 11/505 . . . {for vehicle windows}

E05F 11/52 . . combined with means for producing an additional movement, e.g. a horizontal or a rotary movement

E05F 11/525 . . . {for vehicle windows}

E05F 11/53 . for sliding windows, e.g. vehicle windows, to be opended or closed by horizontal movement

E05F 11/535 . . {for vehicle windows}

E05F 11/54 . for doors

E05F 13/00 **Mechanisms operated by the movement or weight of a person or vehicle** (through power-operated wing-operating mechanisms E05F 15/00)

E05F 13/02 . by devices, e.g. lever arms, affected by the movement of the user

E05F 13/04 . by platforms lowered by the weight of the user

E05F 15/00 **Power-operated mechanisms for wings** {(for hatch covers B63B 19/14; for elevator

doors B66B 13/00; motor-operated devices for completing closing or initiating opening of a wing E05B 17/0029; limit switches H01H 3/16)}

E05F 15/0004 . {Safety devices, e.g. safety couplings, detection of obstructions or end position (E05F 15/20 takes precedence); anti-dropping devices E05D 13/003; by current overload H02H 7/0851}

E05F 15/0008 . . {specially adapted for vehicle windows or roofs (E05F 15/0013 to E05F 15/0095 take precedence)}

E05F 15/0013 . . {specially adapted for mass transit vehicles (E05F 15/0017 to E05F 15/0095 take precedence)}

E05F 15/0017 . . { Detection by means of monitoring transmitted force or torque (E05F 15/0082, E05F 15/0095 take precedence); Safety, e.g. slip, couplings}

E05F 15/0021 . . {Detection using safety edges}

E05F 15/0026 . . . {by disruption of energy beams, e.g. light, sound}

E05F 15/003 . . . . {specially adapted for vehicle windows or roofs}

E05F 15/006 . . . {by change in electrical conductivity}

E05F 15/0065 . . . . {specially adapted for vehicle windows or roofs}

E05F 15/0073 . . . {by change in electrical capacity}

E05F 15/0078 . . . {by change in fluid pressure}

E05F 15/0082 . . . {by transmission of mechanical forces, e.g. rigid, movable members}

E05F 15/0095 . . {specially adapted for pressure medium-operated mechanisms for wings, e.g. detection by means of monitoring transmitted fluid pressure (E05FB15/00B6H takes precedence)}

E05F 15/02 . with pressure medium

E05F 15/025 . . {for folding wings}

E05F 15/04 . . for swinging wings

E05F 15/042 . . . {specially adapted for use in vehicles}

E05F 15/045 . . . . {for railway-cars or mass transit vehicles}

E05F 15/047 . . . {operated by linear motors acting on a helical track coaxial with the suringing axis}

E05F 15/06 . . for horizontally-sliding wings

E05F 15/065 . . . {for railway-cars}

E05F 15/08 . . for vertically-sliding wings

E05F 15/083 . . . {for overhead wings}

E05F 15/086 . . . {for vehicle windows}

E05F 15/10 . with rotary electromotors {(detection of end position by striking, safety couplings E05F 15/0017)}

E05F 15/103 . . {for folding wings}

E05F 15/106 . . {for revolving wings}

E05F 15/12 . . for swinging wings

E05F 15/121 . . . {operated by meshing gear wheels, one of which being mounted at the wing pivot axis; the motor acting directly on the wing pivot axis}

E05F 15/122 . . . {operated by push-pull mechanisms}

E05F 15/123 .... {by flexible or rigid rack-and-pinion arrangements}
E05F 15/124 .... {by screw-nut mechanisms}
E05F 15/125 .... {by friction wheels}
E05F 15/126 ... {operated by flexible elongated pulling elements, e.g. belts, chains}
E05F 15/127 ... {operated by swinging arms}
E05F 15/14 .. for horizontally-sliding wings
E05F 15/141 ... {for railway-cars}
E05F 15/142 ... {operated by push-pull mechanisms, e.g. friction wheels, flexible or rigid rack-and-pinion arrangements (E05F 15/141, E05F 15/147, E05F 15/148 take precedence)}
E05F 15/143 .... {allowing or involving an additional movement of the wing}
E05F 15/145 ... {operated by flexible elongated pulling elements, e.g. belts, chains (E05F 15/141 takes precedence)}
E05F 15/146 .... {allowing or involving an additional movement}
E05F 15/147 ... {operated by swinging arms (E05F 15/141 takes precedence)}
E05F 15/148 ... {operated by screw mechanisms (E05F 15/141 takes precedence)}
E05F 15/16 .. for vertically-sliding wings
E05F 15/1607 ... {for overhead wings}
E05F 15/1615 .... {operated by flexible or rigid rack-and-pinion arrangements}
E05F 15/1623 .... {operated by screw mechanisms}
E05F 15/163 .... {operated by friction wheels}
E05F 15/1638 .... {operated by swinging lever arms}
E05F 15/1646 .... {operated by flexible elongated pulling elements, e.g. belts (E05F 15/1615 takes precedence)}
E05F 15/1653 ..... {by chains}
E05F 15/1661 ..... {by cables or ropes}
E05F 15/1669 ... {for vehicle windows}
E05F 15/1676 .... {enabling manual drive, e.g. in case of power failure}
E05F 15/1684 .... {Control circuits therefor}
E05F 15/1692 .... {Specially adapted motor units, e.g. geared motors}

E05F 15/18 . with other electrical means, e.g. solenoids {or linear motors}

E05F 15/20 . controlled by automatically-acting means, e.g. by photocells, by electric waves, by thermostats, by rain, by fire, {by remote or time control}
E05F 15/2007 .. {by thermostats, rain, wind or noise (E05F 15/2015 takes precedence)}
E05F 15/2015 .. {by emergency conditions, e.g. fire (operating or controlling mechanisms for physical fire-barriers A62C 2/24; locks actuating in response to heat E05B 65/104)}
E05F 15/2023 .. {by detection of movement or presence of persons or objects}
E05F 15/203 ... {with photocells}
E05F 15/2038 ... {by the weight or other physical contact of a person or object}
E05F 15/2046 ... {reacting to a device carried by a person or object, e.g. a magnet or reflector (E05F 15/2076 takes precedence)}
E05F 15/2076 .. {by remote wireless control}
E05F 15/2084 ... {with light beams}

E05F 15/2092 . . {by time control}

E05F 17/00 **Special devices for shifting a plurality of wings operated simultaneously** (for simultaneously moving a plurality of interconnected ventilating lamellae E06B 7/086)

E05F 17/001 . {of prison cell doors}

E05F 17/002 . {for wings which lie one behind the other when closed}

E05F 17/004 . {for wings which abut when closed}

E05F 2003/00 **Closers or openers with braking devices, e.g. checks; Construction of pneumatic or liquid braking devices** (construction of non-pneumatic or non-liquid braking devices E05F 5/00; friction devices in hinges E05D 11/08)

E05F 2003/22 . Additional arrangements for closers, e.g. for holding the wing in opened or other position

E05F 2003/228 . . Arrangements where the end of the closer arm is sliding in a track

E05F 2005/00 **Braking devices, e.g. checks; Stops; Buffers;** {Dovetails with buffering action}; (construction of pneumatic or liquid braking devices E05F 3/00; combined with devices for holding wings open E05C 17/00; devices for limiting opening of wings or for holding wings open by a movable member extending between frame and wing E05C 17/04)

E05F 2005/02 . specially for preventing the slamming of {swinging} wings {during final closing movement, e.g. jamb stops}

E05F 2005/04 . . hand-operated, {e.g. removable}; operated by centrifugal action {or by high closing speed}

E05F 2005/043 . . . operated by centrifugal action at high closing speed

E05F 2005/046 . . . hand operated

E05F 2011/00 **Man-operated mechanisms for operating wings, including those which also operate the fastening** (connecting mechanisms for a plurality of wings E05F 17/00)

E05F 2011/38 . for sliding windows, e.g. vehicle windows, to be opened or closed by vertical movement

E05F 2011/382 . . {for vehicle windows (E05F 11/40 to E05F 11/52 take precedence)}

E05F 2011/385 . . . {Fixing of window glass to the carrier of the operating mechanism}

E05F 2011/387 . . . . using arrangements in the window glass, e.g. holes

E05F 2015/00 **Power-operated mechanisms for wings** {(for hatch covers B63B 19/14; for elevator doors B66B 13/00; motor-operated devices for completing closing or initiating opening of a wing E05B 17/0029; limit switches H01H 3/16)}

E05F 2015/0004 . {Safety devices, e.g. safety couplings, detection of obstructions or end position (E05F 15/20 takes precedence); anti-dropping devices E05D 13/003; by current

overload H02H 7/0851}

E05F 2015/0021 . . {Detection using safety edges}

E05F 2015/0026 . . . {by disruption of energy beams, e.g. light, sound}

E05F 2015/0034 . . . . with acoustical sensors

E05F 2015/0039 . . . . . using reflection from the obstruction

E05F 2015/0043 . . . . with optical sensors

E05F 2015/0047 . . . . . by interruption of the beam

E05F 2015/0052 . . . . . the beam being parallel to the wing edge

E05F 2015/0056 . . . . . the beam being perpendicular to the wing edge

E05F 2015/006 . . . {by change in electrical conductivity}

E05F 2015/0069 . . . . using switches in serial arrangement

E05F 2015/0086 . . . for detection during opening

E05F 2015/0091 . . . Fault detection of safety edges

E05F 2015/10 . with rotary electromotors {(detection of end position by striking, safety couplings E05F 15/0017)}

E05F 2015/12 . . for swinging wings

E05F 2015/127 . . . {operated by swinging arms}

E05F 2015/128 . . . . the end of the arm sliding in a track; Slider arms therefor

E05F 2015/20 . controlled by automatically-acting means, e.g. by photocells, by electric waves, by thermostats, by rain, by fire, {by remote or time control}

E05F 2015/2023 . . {by detection of movement or presence of persons or objects}

E05F 2015/2053 . . . with acoustical sensors

E05F 2015/2061 . . . with optical sensors (photocells E05F 15/203)

E05F 2015/2069 . . . using camera's

E05F 2017/00 **Special devices for shifting a plurality of wings operated simultaneously** (for simultaneously moving a plurality of interconnected ventilating lamellae E06B 7/086)

E05F 2017/005 . for sliding wings

E05F 2017/007 . . with means for interlocking the wings

E05F 2017/008 . for swinging wings

E05F 2700/00 **Operating mechanisms for sliding windows**

E05F 2700/02 . Devices for moving and locking sliding windows

E05F 2700/04 . Devices for blocking sliding windows in general